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The present invention relates to the field of the nonpeelable closure membranes and has as a multi-layer object such a sealed closure membrane provided with a device of controlled opening.

Currently, all the conventional closure membranes are made up, either of simple materials, or of composite materials. The simple materials are of the films plastic standard, for example, polyester or polypropylene, standard paper or standard aluminium, coated on their face in contact with the pot, of a layer of thermoscellant or welding varnish or of a layer of polymeric extruded, Co-extruded or pasted, the other face being able to be printed or not. The composite materials, as for them, are composed of two layers, for example, a polymeric film and an aluminium film, or two films polymeric, or a paper film and, either a polymeric film, or an aluminium film.

These materials are used in different thickness and are assembled by pasting, extrusion or coextrusion. The face of the layer in contact with the pot will be also coated with a layer of varnish thermoscellant or welding, or with a layer of polymeric extruded, coextrudée or pasted, the other face being it also reserved with the impression.

Extrusion or the coextrusion or pasting used give access two types of closure membranes, namely the peelable said closure membranes because a traction about the closure membrane allows the nonpeelable tear or désoperculage, and closure membranes which, once welded, are not extractable any more. These closure membranes are often avoided because they ask a tool perforating to reach the packaged product.

The composition of the closure membrane and the choice of materials are related economic to choice and function of following need barrier or sealing the requirements of the product to be conditioned and of its time of conservation.

These closure membranes can where necessary, being aseptic thanks to an additional layer in the form of film which is on the layer which allows the welding.

The elimination of film right front its employment, makes it possible to release the sterile weldable face, this sterility having for origin the same principle of manufacture (coextrusion).

The purpose of the present invention is allowing an easy opening of a portion of the nonpeelable closure membranes all in the now sealed ones.

It has, indeed, for object a nonpeelable sealed closure membrane multilayer, characterized in that it is provided with a device of controlled opening all in now a perfect sealing with the pot.

Thus, a nonpeelable closure membrane will be obtained, which, once welded, will still allow a controlled opening.

The invention will be better included/understood thanks to the description hereafter, which refers to embodiments preferred, given as examples nonrestrictive, and explained with reference to the annexed schematic drawings, in which figure 1 is a cross-section, increased, of a closure

membrane with two layers, according with the invention, figure 2 is a cross-section, increased, of an according closure membrane with three layers with the invention, figure 3 is a sight in prospect for a pot provided with a closure membrane with strip of tear stuck or welded onto a zone weakened in the shape of strip, figure 4 is a sight in prospect for a pot provided with a closure membrane with strip of tear stuck or welded onto a weakened zone having same shape that the closure membrane, figure 5 is a sight in prospect for a pot provided with a closure membrane of which a portion of the zone of embrittlement in the shape of strip exceeds the zone of welding externally, figure 6 is a sight in prospect for a pot provided with a closure membrane, of which a portion of the embrittlement having the same shape which the closure membrane, passes externally the zone of welding, figure 7 is a sight in prospect for the means implemented to cut the zones weakened in the shape of strips, of manner continuous, and figure 8 is a sight in prospect for the means implemented to cut the zones weakened in the shape of closure membrane, of discontinuous manner.

In accordance with the invention, a sealed multilayer closure membrane 5 nonpeelable is provided with a device of controlled opening 1 allowing its tear all in now a perfect sealing with pot 4.

According to a first embodiment, and as shown in the figure 1, device 1 is advantageously in the form of an embrittlement from the one, 2, of its two layers 2 and 3, thus ensuring the tear or the boring of the other layer, 3, and thus of closure membrane 5 whole while having maintained a sealing perfect with pot 4.

▲ top According to a feature of the invention, the weakened layer is a film with physical strength impor or coDolvmre., - tante' poXymère' metglized or not, provided with a continuous or discontinuous cutting front assembly by pasting or extrusion or coextrusion with layer 3, allowing the welding on pot 4, in the shape of a film polymeric, copolymer, extruded or Co-extruded.

This embodiment with two layers 2 and 3 is valid in the case of products to condition not very sensitive with gas, the steam or the ultraviolet rays.

Under these conditions, the polymeric film forming layer 2 assembled with film polymeric, copolymer, extruded or coextrudé forming layer 3 and allowing the welding, present less properties barriers than film of welding forming layer 3, because the polymeric film forming layer 2 being provided with a cutting, its barrier is stopped.

On the other hand, if the polymeric film forming layer 2 is metallized, it makes it possible of-to preserve very acceptable properties of barrier at the ultraviolet rays.

The composition of closure membrane 5 and the choice of materials are related to economic choices and function of a need barrier or a following need of sealing the requirements of the product to be conditioned as well as its time of conservation.

Following a feature of the invention, layer 2, weakened, is out of polyester metallized or not, resistant with a tool of sealing, resistant and printable, layer 3 being out of weldable polyethylene on pot 4.

In accordance with another feature of the invention, the thickness of layer 2 lies between 12 and 24 micra and the thickness of layer 3 lies between 20 and 70 micra.

In general, the film used for layer 2 will be a polyester of 12 or 15 micra, but a thicker film going up to 24 micra could be used. The polyester will be generally used because it is a film printable, but especially resistant with a tool of completely conventional sealing. Moreover, it is a resistant material, which will cause to facilitate the tear of closure membrane 5.

But all the films presenting of the features of solidity, thermorésistance and impression identical could be used.

The impression can also be carried out, if necessary, on layer 3, if the polyester is not metallized, the aforementioned impression appearing by transparency.

The film constituting layer 3 will be that allowing the welding. The ideal one is a compatible film for its welding with the material with which it will be in contact on the zone of welding 10 of pot 4

itself.

In numerous case, one will be able to use a film of the same polymeric base or copolymer that that onto which it will be welded. That thus relates to weldable films on themselves, the film having to be adapt with the material onto which it is necessary to weld, like with the product being conditioned because of its properties barriers and with the risks of stains in the zones of sealing which would come to disturb the sealing. The generally selected material will be the polyethylene. One obtains excellent results with a polyethylene having for thickness 20, 30, 40, 50, 60 or 70 micra. Beyond 70 micra, the tear of following closure membrane 5 cutting is more difficult to realize.

Thus, single the cut out polyester has lost its properties barriers because of embrittlement 1. The other components of closure membrane 5 are not weakened and preserve all their properties barriers.

According to a second embodiment, and like the mob tre figure 2, embrittlement 1 is located on an additional layer 6 assembly by pasting or extrusion or coextrusion with one or two layers 2 and 3t, thus ensuring the tear of the aforesaid layers 2' and 3' and thus of closure membrane 5 whole in now a perfect sealing with pot 4.

According to a feature of the invention, layer 6 additional-is a film with substantial, polymeric physical strength or copolymer, provided with a continuous or discontinuous cutting front assembly by pasting or extrusion or coextrusion with layer 2' or 3' in the shape of lul-same an aluminium film assembled by pasting, or extrusion or coextrusion with layer 3' or 2' allowing the welding on the pot, in the shape of a film polymeric, copolymer, extruded or Co-extruded.

Following another feature of the invention, weakened layer 6 is out of polyester resistant with a tool of sealing, resistant and printable, layer 3' being out of weldable polyethylene on pot 4 and lays down it 2' being made up of an aluminium film or very other. film introducing the mimes properties barriers and the maie low strength physical that aluminium or following features of sealing qises.

In accordance with another feature of in vention, the thickness of layer 6 lies between 12 and 24 micra, that of layer 2' between 7 and 40 micra and that of layer 3' between 20 and 70 micra.

This embodiment is used for all the products to condition having a normal or large sensitivity to gas, the steam or the ultraviolet rays.

The films forming layers 2' and 3' answer to the mimes criteria and to the mimes requirements that those retained for the choice of films forming layers 2 and 3 in the first embodiment.

The material composing polymeric film of layer 6 will be in general aluminium, because starting from 12 micra of present thickness it of excellent features of impermeability to oxygen, with the steam like to the ultraviolet rays. In addition, used until approximately 40 micra, it tears perfectly, One will be able optionally to replace the layer of aluminium by a film presenting of the identical properties barriers, as well as the same physical strength as aluminium, because in the case of aluminium, the tear caused at the time of the opening of pot 4 scrupulously marries that of cut out polyester.

Layers 2', 3' and 6 are assembled by pasting, extrusion or coextrusion. For pasting, one will use an adhesive presenting an high strength. The adhesives must be compatible with materials to assemble, so as to obtain an excellent guarantee of adhesion not to degrade itself at the moment of the welding and so that the materials are not délaminent at the moment of the tear. The adhesive can be easily replaced by an extrusion of polymeric or copolymer. A layer from 8 to 12 polyethylene g/m2 is sufficient. This operation will be carried out on a machine of conventional extrusion bed.

To assemble layer 2' with layer 3, one will be able to avoid the operation of pasting, extrusion or coextrusion by directly applying film of welding to aluminium, or by the addition of primary of hooking, or while applying, with or without primary of hooking, a varnish or a lacquer thermoscellante.

The impression can also be carried out, if necessary, on layer 2', if the polyester is not metallized, the aforementioned impression appearing by transparency.

According to an alternative of the invention, and as figures 3 and 4 show it, closure membrane 5 is provided of a strip of tear 7 stuck or welded onto the zone weakened 8 and sufficiently large to ensure good taken between two fingers.

In addition, the aforementioned strip 7 will have also to be sufficiently solid to resist the moment rear rache.

According to another alternative of the invention, and as figures 5 and 6 show it, a portion 9 of zone 8 exceeds externally the zone of welding 10 and sufficiently to ensure good taken between two fingers for the tear of the closure membrane.

This technical makes it possible to remove the demounting of strip 7. Traction on this portion of overflowing closure membrane 5 of pot 4, therefore of the zone of welding 10, will cause a substantially identical result.

As figures 3 and 5 show it, the weakened zone 8 with the shape of a strip from approximately 1 cm of wide extending over the entire length from closure membrane 5.

According to another alternative, and as figures 4 and 6 show it, the weakened zone 8 is located just inside the zone of welding 10, having same shape that this last, therefore that closure membrane 5.

Thus, while drawing on the strip from tear 7, or on portion 9 exceeding externally the zone of welding 10, the user will open closure membrane 5 of pot 4 following cutting. Indeed, at the moment of the opening, the polyester, very resistant material physically, will involve with him the aluminium and the film of welding, their strength with the tear being clearly lower than that of polyester. Thus, these materials will follow perfectly, at the time of the opening of pot 4, the shape of cut out polyester, the zone of welding 10 between closure membrane 5 and remaining pot 4 intact. Single a portion of closure membrane 5, having the wished form, is torn off completely or partially.

The invention also has as an object a manufacturing process of a closure membrane 5, according to the first embodiment represented figure 1, which consists in cutting out continuous manner or discontinuous the film out of metallized polyester or non7formant layer 2', then to assemble it by pasting or extrusion or coextrusion with polyethylene film forming layer 3'.

The manufacturing process of the closure membrane according to the second embodiment represented figure 2, consists in cutting out continuous manner or discontinuous the polyester film forming layer 6, then to assemble it by pasting or extrusion or coextrusion with aluminium film forming layer 2', and finally to assemble it by pasting or extrusion or coextrusion with polyethylene film forming layer 3'.

According to another feature of the invention, the strip of tear 7 of closure membrane 5 is stuck or welded to that closure membrane 5 simultaneously with the operation of welding of the aforesaid closure membrane 5 onto pot 4.

As shown in the figure 7, the means implemented to cut the weakened zones 8 in the shape of strips or having same shape that that of closure membrane 5 are cutting blades 11 or involved cutting discs, allowing a cut uninterrupted, in the direction of the run of film, located laterally, the cutting blades 11 or the discs being near and upstream of rollers 12 allowing the operation of joining or pasting between layer 6 and lay down it 2', or between layer 6 and 3 lay down it'. This embodiment requires a tension of strip as low as possible.

As shown in the figure 8, the means implemented to cut out the weakened zone 8 in the shape of strips or having same shape that that of closure membrane 5 are in the shape of tooling of cutting 13 allowing a cut located according to an impression with lateral and longitudinal location, the tooling of cutting 13 being near of rollers 12 allowing the operation of joining or pasting between layer 6 and lay down it 2', or between layer 6 and 3 lay down it'.

If thus a straight cutting is carried out, it will take place right front pasting, as shown in the figure 7. For extrusion, an equivalent principle can be retained. This technical makes it possible to use a printed polyester or not, or to carry out the impression on aluminium itself.

If, on the other hand, one carries out a cutting having the shape of pot 4, it will take place at the same time as the impression, so as to be able to position blades 11 or the discs or the tooling of cutting 13 compared to pot 4.

Closure membranes 5 being generally manufactured by large reels, the operation of joining or welding of the strips of tear 7 with the aforementioned closure membrane 5 will take place only right front or just after the operation of welding of the aforesaid closure membrane 5 with pot 4.

The invention was described specially in connection with a closure membrane 5 intended to seal a pot 4. However, it is also applicable with very other packing intended to be sealed by welding, particularly bottles, cans, limp.

Of course, the invention is not limited to the embodiments described and not represented with the annexed drawings. Modifying remains possible, particularly from the point of view of the constitution of the various elements, or by substitution the equivalent technical ones, without leaving for all that the field protection of inventions.